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## United States Patent [19]

## **Thomson**

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[54] PRIMATE EMBRYONIC STEM CELLS

[75] Inventor: James A. Thomson, Madison, Wis.

[73] Assignee: Wisconsin Alumni Research

Foundation, Madison, Wis.

[21] Appl. No.: 591,246

[22] Filed: Jan. 18, 1996

Related U.S. Application Data

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[51] Int. Cl.<sup>6</sup> ...... C12N 5/06

[52] U.S. Cl. ...... 435/363; 435/366; 435/373

[56] References Cited

U.S. PATENT DOCUMENTS

5,449,620 9/1995 Khillan .

FOREIGN PATENT DOCUMENTS

WO 94/03585 2/1994 WIPO.

OTHER PUBLICATIONS

Bongso, et al., "Isolation and culture of inner cell mass cells from human blastocysts", Human Reproduction, 9:2110-2117, 1994.

Brown, et al., "Criteria that optimize the potential of murine embryonic stem cells for in vitro and in vivo developmental studies", In Vitro Cell. Dev. Biol. 284:773–778, Dec. 1992.

Damjanov, et al., "Retinoic acid-induced differentiation of the developmentally pluripotent human germ cell tumor-dervied cell line, NCCIT", Laboratory Investigation, 68:220-232, 1993.

Nation/World, "Embryonic monkey cells isolated". -Nov. 4, 1994.

Bongso, A., et al., "The Growth of Inner Cell Mass Cells from Human Blastocysts," *Theriogenology*, 41:167 (1994).

Thomson, James A., et al., "Pluripotent Cell Lines Derived from Common Marmoset (*Callithrix jacchus*) Blastocysts," *Biology of Reproduction*, 55:254–259 (1996).

Primary Examiner—Michael P. Woodward Assistant Examiner—Brenda G. Brumback Attorney, Agent, or Firm—Quarles & Brady

[57] ABSTRACT

A purified preparation of primate embryonic stem cells is disclosed. This preparation is characterized by the following cell surface markers: SSEA-1 (-); SSEA-3 (+); SSEA-4 (+); TRA-1-60 (+); TRA-1-81 (+); and alkaline phosphatase (+). In a particularly advantageous embodiment, the cells of the preparation have normal karyotypes and continue to proliferate in an undifferentiated state after continuous culture for eleven months. The embryonic stem cell lines also retain the ability, throughout the culture, to form trophoblast and to differentiate into all tissues derived from all three embryonic germ layers (endoderm, mesoderm and ectoderm). A method for isolating a primate embryonic stem cell line is also disclosed.

11 Claims, 8 Drawing Sheets

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